

# Chapter - 1

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## **Chapter – 1**

# **INTRODUCTION**

### **1.1 Introduction**

Agricultural sector has held a dominant position in the India's economic development. However, this sector is rendered by scanty rainfall in large areas and by erratic monsoon. Partial failure or even delayed in arrival of the monsoon can cause extensive damage to crops and consequently adversely affect the economic condition of farmers. Hence, efforts are required to make water available as supplement to rainfall and thereby mitigate the grave consequences of a long dry spell by supplying water artificially to agriculture. In fact, irrigation plays important role in boosting the growth prospect of agriculture.

Different systems of irrigation are complimentary and supplementary rather than competitive as has been rightly observed by the Famine Enquiry Commission. "The problem of water supply will not be solved by mere extended application of one particular method of irrigation but by the use of all methods." Irrigation comprises of three different components viz. engineering, agriculture and economic and social. Engineering components includes the designing and construction of structures required for storage, diversion, conveyance, delivery and distribution through channels and distributaries, determinations of water yields, rivers and water supplies for irrigated lands. Agricultural components includes the use of irrigation water and various agriculture

practices and cropping patterns, methods of application and the quantity of water for irrigation. The socio-economic component comprises the satisfaction of social and economic needs and desires which are essential for the betterment of the community.

The most important input required for agricultural development is irrigation as it facilitates multiple cropping and increase crop productivity. According to Challes Trevelyan, "Irrigation is everything in India. Water is more valuable than land, because, when water is applied to land it increases its productivity at least six fold and renders great extends of land productivity which otherwise would produce less quantities of output."

In fact, the irrigation projects have made security of life, they have increased the yields and the value of the land and the revenue derived from it. They have lessened the cost of famine relief and have helped to civilize the whole region. In addition, they yield handsome profits to the government. Therefore, irrigation projects are quite essential for the agricultural development of region. In fact, they helps to bring out technological changes in agriculture thereby enhance economic prosperity of farmers and the region.

## **1.2 Importance of Irrigation**

The importance of irrigation can be evaluated from the following points.

### **1. Unequal and Uncertain Rainfall**

Rainfall is very much unequal in India. The average rainfall of India is 42 inches in a year. However, it differs from regional disparity states like Assam, West Bengal got high rainfall, while other states get relatively low rainfall. However, it is not certain that rainfall will be in proper time, some time it is not before the sowing, at other time it is just after the sowing.

### **2. Prosperity**

An adequate water supply will bring prosperity, create employment potential, increase incomes and enhance capital formation in agriculture.

### **3. Source of Government Income**

To provide irrigation water by canals and tubewells are the source of government income also. When there is more of agricultural income there can be more of government income as majority of the population is dependent on agriculture and they are paying the taxes.

### **4. Commercial Farming**

Development of irrigation potential and its utilisation can pave the way for commercialization of agriculture in place of subsistence farming, which can play a pivotal role in raising the level of income of the farming community.

## **5. Plantation**

Irrigation facility has now a days become very much important for Tea, Coffee and Rubber plantations, which are very much profitable.

## **6. Employment Generation**

Development of irrigation facilities can generate employment opportunities by developing the system of multiple cropping throughout the year and also by reclamation of wasteland.

## **7. Economic Development and Planning**

By raising agricultural productivity, irrigation system can play an important role in the planned development of our country. Modernized agricultural sector is the basis pillar for the development of industry, trade and transportation system required for all round development of the country. Further, such increased productivity can also raise the government revenue.

### **1.3 Irrigation Development in India since Independence**

Since independence, the government had spent about Rs. 231400 crores (at 1996-97 prices) on major, medium and minor irrigation projects. As a result, the irrigation potential has increased from 22.6 million hectares in the pre plan period (i. e. 1950-51) to 89 million hectares at the end of 1996-97. Now India has the largest irrigation area among all the countries in the world. This has greatly contributed to the increase in food grain production from 51 million tonnes in 1950-51 to 203 million tonnes in 2001-02.

## 1.4 Sources of Irrigation

Irrigation is made available to agriculture from the various sources.

Such as 1) Canal, 2) Wells, 3) Tanks, 4) Others.

**Table No. 1.1**  
**Sources of Irrigation**

Sources of Irrigation	1950-51		1999-2000	
	Area (million hectares)	Percentage	Area (million hectares)	Percentage increase (%)
Canals	8.3	40.0	18.0	31.5
Wells & Tubewells	6.0	29.0	33.0	58.7
Tanks	3.6	17.0	2.7	4.7
Other Sources	3.0	19.0	2.9	5.1
Total	20.9	100	57.2	100

Source : Central Statistical Organisation (Statistical Abstract 2002)

Table No. 1.1 showed that canal irrigated areas had increased from 8.3 million hector to 18 million hectares during 1950-51 to 1999-2000. Even then, its relative importance has come down from 40% to 31.5%. The well irrigated area has increased from 6 million hectors to 33.0 million hectares. During this period, it is well irrigation, particularly tubewells irrigation has made the most spectacular progress.

## 1.5 Classification of Irrigation by Projects

In India, irrigation is classified into three groups viz. major, medium and minor irrigation projects.

### 1. Major Irrigation Project

Major irrigation projects are those with culturable command areas (CCA) more than 10000 hectares.

## 2. Medium Irrigation Project

Those with culturable command areas (CCA) between 2000 and 10000 hectares.

## 3. Minor Irrigation Projects

Minor irrigation projects are those with culturable command areas (CCA) less than 2000 hectares.

## 1.6 Development of Irrigation Potential and Utilisation

The irrigation potential developed irrigation project has not been fully utilised.

**Table No. 1.2**  
**Plan wise Position of Major/Medium Irrigation Potential and Utilisation**

Plans	Potential (Million Hectares)	Utilisation (Million Hectares)
First Plan	12.20	10.98
Second Plan	14.33	13.05
Third Plan	16.57	13.57
Fourth Plan	20.70	18.69
Fifth Plan	24.72	21.16
Sixth Plan	27.70	23.57
Seventh Plan	29.72	25.47
Eighth Plan	31.34	26.86
Ninth Plan	33.17	28.02

Source: Tata Service Ltd., Statistical Outline of India

Table No. 1.2 showed that irrigation potential of major and medium irrigation projects has increased from 12.20 million hectares in the First Five Year Plan to 31.34 million hectares in the Eighth Five Year Plan.



Against this, the irrigation potential utilisation, which was 10.98 million hectares in First Plan significantly, increased to 26.86 million hectares in Eighth Plan. However, during Ninth Plan, total potential was 33.17 million hectares against 28.02 million hectares utilisation.

## **1.7 Irrigation Programmes**

### **A) Accelerated Irrigation Benefits Programme**

AIBP launched in 1996-97 to encourage the states for completion of ongoing irrigation projects through Central Loan Assistance (CLA) is now helping accelerate benefit from locked up investment. The Fast Track Programme launched in February 2002 under AIBP, has been modified with effect from April 2004 to provide central assistance in the form of 70% loan and 30% grant for non-special category states and 10% loan and 90% grant for special category states for projects under the Fast Track Programme. For projects not under Fast Track Programme, an incentive of conversion of loan to grant is being given if projects are completed on schedule.

The programme covered 181 major/medium irrigation projects or components of projects and 3810 surface minor irrigation schemes upto 2003 with release of Central Loan Assistance (CLA) of Rs. 15398 crores upto December 2004 for such projects. This included 32 major/medium projects/components under the Fast Track Programme, for which CLA of Rs. 1444 crores was provided upto the end of December 2004. There were 32 projects completed by the end of December 2004, of which 5 were Fast Track Projects. An irrigation potential of 2.7 million

hectares was created under the programme through the major/medium irrigation projects by the end of March 2004. During the same period, an irrigation potential of 80 thousand hectares were created through surface minor irrigation schemes.

#### **B) Command Area Development and Water Management Programme**

The restructured programme, which started from April 2004 is aimed at bringing about better water management practices and efficient utilisation of irrigation water which intra-alia includes taking up corrective measures for rectification of deficiencies of delivery systems on the one hand and participation of water users in sharing the cost of works on the other. The programme would cover 133 project commands with total culturable command area of 1.7 million hectares. The work is already in progress in 0.9 million hectares and is expected to pick up by the end of the 2004-05.

#### **C) Repair, Renovation and Restoration of Water Bodies**

A pilot scheme in the state sector for repair, renovation and restoration of water bodies directly linked to agriculture is proposed to be taken up during the remaining period of the Tenth Plan. The objectives of the scheme are –

- i) To restore and augment storage capacity of water bodies and
- ii) To recover and extend their cost irrigation potential.

As per the guidelines prepare for the scheme, water bodies having original irrigation culturable command area between 40 hectares and 2000 hectares would be eligible for this pilot scheme. The states may undertake pilot projects in one or two districts for increasing the storage capacity and the project would include work or repair of related structures like check dams, weirs, bunds and the water conveyance systems. Once the pilot scheme is completed and validated, it would form the basis for launching of the "National Water Resources Development Project" at a much larger scale and spread.

### 1.8 The Jangamhatti Irrigation Project, Chandgad Taluka

Keeping in view the significance of irrigation in agricultural development, the Jangamhatti irrigation project has been selected for the intensive study, which is located in Chandgad taluka of Kolhapur district. This project was started on January, 1981. The capacity of dam to store water is 21.40 square kms and water level is 34.21 million. This project has irrigation potential to the extent of 4503 hectares. At present command area of the project is 4457 hectares. Moreover 14 villages have been covered under this project. The length of dam is 960 meter and its height is 31.40 meters. The total land occupied by project is 519.28 hectares. The project was completed and implemented on June 1995. Since then farmers in this have been availing the irrigation facility. Now time is quite mature to assess the performance of this project in the economic development of this region.

*15 years to completion  
project.  
what about cost  
escalation.*

**Jangamhatti Medium Project, Tal. Chandgad  
(Storage at u/s of village Jangamhatti) Salient Features**

Sr. No.	Item	Particulars
1.	Scope of the scheme	An irrigation project on Honhall Nalla which tributary of Tamraparni river, Tal. Chandgad, Dist. Kolhapur with lifts on both flanks including an area of 2570 hectares in Chandgad taluka of Kolhapur district.
2.	Source	Honhall Nalla Tributary of Tamraparni river, which is tributary of river Ghatprabha in Krishna basin.
	a) State	Maharashtra
	b) Region	Western Maharashtra
	c) District	Kolhapur
	d) Taluka	Chandgad
	e) Topo Sheet No.	48/I/1, 48 I/5
	f) Latitude	15°-51' – 30° N
	g) Longitude	74°- 17' – 00' E
3.	Upstream Utilisation	Nil
4.	Yield and Utilisation of Project	
	a) Catchment Area	21.40 sq. km.
	b) Average Rainfall (mm/inch)	3125 mm to 1875 mm
	c) 75% Dependable Yield	27.97 m cum/0.988 TMC
	d) Gross Annual Utilisation (Mcum/TMC)	27.97 Mcum/0.988 TMC
	e) Percentage of average annual utilisation to net 75% dependable yield	100%
5.	Dam and Reservoir	
	a) Gross capacity of reservoir at FRL	34.21/1.208 (Mcum/TMC)
	b) Capacity of dead storage	1.00 Mcum
	c) Capacity of live storage	26.29 Mcum
	d) Annual lake evaporation (Mcum/TMC)	4.47 Mcum
6.	Controlling Levels	
	a) Sill level	706.00 M
	b) M. D. D. L.	707.10 M
	c) F. R. L.	724.20 M
	d) H. F. L.	725.40 M
	e) T. B. L.	727.10 M

7.	Type of Dam	
	a) Maximum height of dam	31.40 M
	b) Length of dam	960.00 M
	c) Total quantities of	
	i) Earth work	0.72 Mcum
	ii) Concrete	Mcum
	iii) Masonry	0.013 Mcum
	iv) Excavation	0.52 Mcum
8.	Submergence	
	a) Land under submergence	390.00 Hectares
	b) No. of village affected	1 No.
9.	Spillway	
	a) Type	Ogee type ungated spillway
	b) design flood	467.20 cusecs
	c) Flood depth over crest	1.20 M
	d) Length	175 M
10.	Command area	
	a) Gross command area	3440 hectares
	b) culturable command area	3096 hectares
	c) Irrigable command area	2570 hectares
11.	Canals	No canal system, Lift irrigation by constructing 5 KT weirs.
	a) No. of talukas benefited	One taluka
	b) No. of villages benefited	14 villages
12.	Total expenditure upto 9/2006	Rs. 1925.60 lakhs
13.	Physical status as on 9/2006	95% work completed, 2 m height concrete of ogee shape waste weir is the balance work and is planned to completed upto June 2006

### 1.9 Objectives of the Study

The following are the main objectives of the study.

1. To study the impact of Jangamhatti irrigation project on agricultural production, yield etc. in the command area of Chandgad taluka.

2. To examine the role of irrigation on cropping pattern and crop diversification in agriculture.
3. To study the impact of Jangamhatti irrigation on social status of farmers in the Chandgad taluka.
4. To examine the impact of irrigation on economic condition of farmers.
5. To study the impact of irrigation development on land utilisation in the region.
6. To study the extent of diversification in occupation, employment generation in the region.
7. To study the issues relating to optimum utilisation of water resources.
8. To study the changes in consumption pattern of the agricultural producers.

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M Phil*

#### **1.10 Research Methodology**

The study was undertaken in the command area of Jangamhatti irrigation project, located in the Chandgad taluka of Kolhapur district, in which fourteen villages are covered. Out of 14 villages Jangamhatti village has been selected for the intensive study in view to know socio-economic impact of irrigation project. Moreover, out of total farmers of the village hundred farmers have been selected and other relevant variables were collected through fieldwork for the year 2005-06. For this purpose scheduled method was used. Moreover, appropriate quantitative techniques were used to assess the impact on irrigation on agricultural production.

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